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ORIGINAL ARTICLES.

CALOMEL CONJUNCTIVITIS.

Contribution from the Eye and Ear Department of the Baltimore City Hospital Dispensary.

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It has long been known that severe inflammation of the conjunctiva results from the local application of calomel when the iodide of potassium is being administered internally. This fact is interesting not only on account of its importance in ophthalmic therapeutics, but also from the light which it throws upon the manner in which calomel is absorbed into the system, a question still under discussion. Three cases illus-

trating this unwelcome result have occurred during the last three years in the Eye and Ear Department of the City Hospital Dispensary. It need scarcely be mentioned that in all of these cases the potassium iodide had been prescribed without our knowledge by other physicians.

The abridged clinical records of these patients are as follows:

CASE I.—F. H., æt. 45, came Dec. 28, 1890, with a corneal ulcer of the right eye, the result of an oyster-shell injury received one week previously. The galvano-cautery was used, a paracentesis was made to relieve the accompanying hypopyon and iodoform was subsequently applied. By January 19, 1891, the inflammatory symptoms had almost entirely disappeared leaving an extensive corneal opacity. Calomel insufflations were substituted for the iodoform. On March 19, the patient, who had been using the calomel himself, complained of having had "a cold in his right eye for a week." The ocular conjunctiva was found to be very much reddened and swollen, especially on the nasal side, only slightly on the temporal, and likewise in the lower conjunctival fold with the usual subjective symptoms of acute conjunctivitis. On inquiry we learned that he had been taking potassium iodide for one week. Two days after discontinuing the insufflations the inflammatory symptoms entirely disappeared.

CASE II.—W. M., æt. 29, came to the clinic January 29, 1892. His left eye was phthisical from injury. He had corneal ulcers on the right eye, which had been cauterized elsewhere. When seen by us the right cornea was covered with numerous maculæ. Calomel insufflations were ordered. On February 2, he returned with severe conjunctivitis of the right eye. The inflammation was especially marked at the outer side and in the inferior fold. The patient stated that he had been taking potassium iodide four or five days. The calomel was discontinued and the inflammation rapidly subsided.

CASE III.—P. L., æt. 50; November 28, 1892. He com-

plained that the right eye was somewhat painful but no cause could be discovered; he was therefore kept under observation. Calomel insufflations were used as a placebo November 30 and December 1. On December 2, he had severe conjunctivitis of this eye. The inferior ocular conjunctiva and that of the inferior fold and lower lid were considerably swollen. There were two grayish white spots of false membrane (necrotic) on the lower palpebral conjunctiva, each about 1–2 mm. broad and 4–5 mm. long. This patient, we learned, was also taking potassium iodide. The calomel was no longer used, and on the following day the inflammation had greatly decreased and the membranes had disappeared.

The picture produced experimentally in rabbits by others as well as by ourselves is identical with that met with clinically, consisting of œdema of lids and conjunctiva, injection of the vessels, profuse lachrymation and mucous or even purulent discharge with the frequent formation of a diphtheritic membrane. Sometimes, if the inflammation is kept up, the cornea will become cloudy and there may be loss of corneal substance.

Some authors mention a discoloration of the calomel flakes lying in the conjunctival sac. This was not noticed in the above cases as they were out-patients, and as the calomel was discontinued as soon as the inflammation was observed. Although other cases resulted in prompt recovery on discontinuing the calomel, all cases on record were not so fortunate. Fricke reports a case[1] in which even after vigorous antiphlogistic treatment, recovery was not complete in eleven days; and in Hennequin's case[2] partial symblepharon resulted.[3]

In the case of Fricke the symptoms came on about half an hour after the insufflation, increasing in intensity until not mere-

[1]Hamb. Zeits., Vol. 5. 1837, p. 3.

[2]Gaz. hebdom., 15 fev., 1867.

[3]Hennequin, from the results of the observation of his case, in which a severe pannus cleared up entirely from the resulting inflammation, proposed the combined internal use of potassium iodide with the external use of calomel for the cure of obstinate pannus!

ly the lids, but also the cheeks and nose became reddened and swollen. There was marked blepharospasm. Experimentally in rabbits the symptoms come on in about the same time; once in fifty-seven minutes.[4]

In order to produce the conjunctivitis the potassium iodide need not be given by mouth. This is shown by the case of Meurer[5] which resulted from the external use of potassium iodide to an inflamed testicle while a mild mercurial ointment was being used upon the cornea, and by the case of Fleischer in which he experimentally produced it by using the potassium iodide hypodermatically.[6] It can be shown that neither calomel nor potassium iodide, used alone, produces the above results. That the action of calomel is not purely physical is evidenced by the fact that other physically similar powders have not the same clinical effects.

This question has recently been studied by Schlæfke[7] and by Fleischer,[8] who substantially agree as to the interpretation of this phenomenon. Calomel in the presence of animal fluids containing sodium chloride and under the influence of the body temperature is slowly converted into bichloride and free mercury. As the transformation into bichloride is slow and small in quantity, it is believed that its clinical action on phlyctenulæ, etc., is due to its action in the *nascent* state. This view is supported by the following facts:

1. Fleischer found on adding pure calomel to distilled water and allowing this mixture to stand at the body temperature that none was converted into bichloride, but on adding sodium chloride to the same mixture even at the room temperature, the fluid gave the reaction for bichloride at the end of twenty-four hours.

[4]Schlæfke, see below.

[5]Hirschberg's Centralb. f. prakt. Augenheilk. Suppl., 1890, p. 441.

[6]See below.

[7]Schlæfke, Von Graefe's Archiv. f. Ophthal., Vol. 25, 1879.

[8]Deutsch. med. Woch., 1885, p. 459.

2. When a moderately concentrated aqueous preparation of calomel and sodium chloride is evaporated at 40° C. to dryness and the residue extracted with ether, crystals resembling those of corrosive sublimate crystallize from this ethereal extract. Calomel alone treated thus, does not give this result.

3. On placing the aqueous preparation of calomel and sodium chloride in a sealed vessel and suspending by a thread a gold plate just above the surface of the liquid, the whole being placed in an incubator, the gold on the following day will be found amalgamated in places.

4. On placing some of the same mixture in a tube heated to redness and passing the vapors of iodine through, the red iodide will be obtained; if the experiment is performed without the sodium chloride no red iodide is formed.

5. Kammerer[9] showed that after the insufflation of calomel upon the conjunctiva, mercury could be found in the urine. Alsberg and Vulpius[10] corroborate this statement.

6. Cheminade,[11] after hypodermic injections of an aqueous preparation of calomel, sodium chloride and gum Arabic, found free mercury at the seat of inoculation.

7. Fuerbringer[12] showed that on treating broad condylomata with a sodium chloride preparation of calomel, and washing off after a few minutes with water, that the washings yielded free mercury. He also obtained the same result when there was no sodium chloride in the mixture, the NaCl of the tissues acting instead. This is corroborated by Fleischer. These facts taken in connection with Voit's experiments (which proved that by long continued contact of calomel with solutions of albuminous substances, metallic mercury was precipitated), suggest the following reaction, $2\ Hg\ Cl = Hg\ Cl_2 + Hg$ as opposed to the other possibility $Hg\ Cl + Na\ Cl + H_2O = Hg\ Cl_2 + NaOH + H$. That the first reaction is correct is furthermore

[9]Virchow's Archiv., Vol. 59, p. 459.

[10]Knapp's Archives of Ophthalmol., Vol. 9, 1890, p. 399.

[11]Union medicale, 3 s., Vol. 48, p. 219.

[12]Zeits. f. klin. Medicin., Vol. 8, 1884.

supported by the fact that Fleischer's test-material (composed of calomel, sodium chloride and water) always gave a neutral reaction, even when kept at the body temperature. This would not be the case if the second reaction had occurred.

8. The action of calomel, slow and mild, is itself suggestive; the amount of sodium chloride in the secretions is small (at most not more than 0.8% in the tears) and little bichloride is formed at a time; therefore its mild action when used alone. In the retort the transformation of calomel is likewise slow and the resulting bichloride small in amount. Vulpius was able to secure a demonstrable amount of mercury from the collected urine of ten days, during which about 1 mgr. of calomel was insufflated once daily.[13]

Hirschberg is also of the opinion that calomel is transformed into bichloride; he states[14] that the astringent action exercised by calomel upon phlyctenulæ is due to the resulting bichloride in *statu nascendi.*

Potassium iodide taken internally rapidly appears in the secretions and excretions, (tears, urine and saliva). Schlæfke using a dose of 1 part potassium iodide to 6,000 of body weight, detected it in the aqueous humor of a rabbit by means of palladium chloride in 8 min., and in the tears in 10 min., after its ingestion. In another rabbit, after a dose of 1-10,000, the tears reacted for potassium iodide nine hours after its ingestion. Potassium iodide is not as readily eliminated by the tears as by the urine or saliva. Schlæfke, after a dose of 2 grams, failed to find it in his conjunctival sac, while his urine and saliva reacted markedly for it, even on the following day. Since one can only detect 1 part potassium iodide in 15,000 of water by means of palladium chloride and as the body weight of the adult is about 60 kilos, at least 4 grams must be administered *per diem* in order to produce the reaction. After using 5 grams twice a day, potassium iodide is continuously present in demonstrable quantity in the tears.

[13]Loc. cit.

[14]Einführung in die Augenheilkunde, p. 19.

If a solution of any mercurous salt is treated in a test-tube with potassium iodide, mercurous iodide (HgI) is thrown down as a golden salt, which being very unstable, readily decomposes into mercuric iodide (HgI_2) and free mercury. When mercurous iodide is thus treated with potassium iodide it undergoes the same transformation but the resulting iodide combines with the excess of potassium iodide, forming a double salt and liberating metallic mercury, probably as follows: $2\,HgI + 2KI = K_2HgI_4 + Hg$.

By treating any mercuric salt, as the bichloride, with potassium iodide, mercuric iodide is formed which readily dissolves in a solution of potassium iodide forming a double iodide or iodo-mercurate.[15]

As has been shown, the combined use of potassium iodide internally and calomel externally, produces the same compounds in the conjunctival sac, *i. e.*, potassium iodide being eliminated by the tears, and bichloride of mercury resulting from the decomposition of the calomel, together with the excess of calomel; we should therefore expect them to react in the above manner and experiments carry out this expectation. Experimentally and in some of the cases which were under continuous observation as one of Fricke's, the first change noted was a golden greenish discoloration of the calomel, coming on in rabbits, in from 20 to 30 minutes, suggesting by its color the formation of mercurous iodide. This change of color initiates the onset of the inflammatory symptoms. Thus Schlæfke added to 1% solution of potassium iodide a little calomel, and shaking this, a dirty green precipitate formed, the calomel finally dissolving. On placing 2 to 3 drops of the golden green filtrate in the conjunctival sac of a rabbit, the conjunctiva was found after a few minutes, reddened, chemotic, the cornea cloudy, with slight conjunctival eschars.

From the filtrate Fleischer obtained the double iodide of potassium with both mercurous and mercuric iodides. In order to show that it is non-essential whether mercurous or mercuric iodides

[15]Remsen, Inorg. Chem., p. 623.

were present Schlæfke prepared two solutions, one of mercurous iodide in potassium iodide, the other of the corresponding mercuric salt in potassium iodide. In the conjunctival sac of one eye he placed a few drops of the first solution, carefully protecting the cornea, the other eye was similar treated with the second solution; in half an hour both eyes showed marked chemosis, finally leading to the formation of pus, and eschars at the junction of the ocular and the lower palpebral conjunctiva.

We may conclude, 1, that part of the calomel is transformed into bichloride; 2, that the potassium iodide in the tears combines with this bichloride forming the mercuric iodide and meeting the rest of the calomel forms mercurous iodide, part of which in turn gives rise to mercuric iodide and metallic mercury, while the remainder combines with the excess of potassium iodide forming a double salt with liberation of free mercury; 3, that mercuric iodide arising from the combination of the bichloride and potassium iodide, and also from the decomposition of mercurous iodide, combines with the potassium iodide forming a double iodide; and, 4, that both the above double iodides dissolving in solutions of potassium iodide or of sodium chloride act as caustics.

Returning to the clinical side of this question a few words may be added concerning the recognition of the disease. The inflammation differs from the ordinary acute conjunctivitis in being sharply limited to one part of the conjunctival membrane, usually the lower part of the ocular conjunctiva and that lining the lower lid. When very intense it may involve the conjunctiva of the upper fold, but this is rare. The cornea is not involved excepting when the inflammation is very intense as in experimental cases. In all cases which have come under our observation the disease was monocular but it is frequently binocular. Small or large patches of diphtheritic membrane are frequently seen in the lower conjunctival folds, where the little flakes of calomel collect.

Hirschberg (*loc. cit.*) believes that it is only when the potassium iodide is immediately followed by the calomel insufflation

that the above inflammation ensues. This cannot be accepted, for Schlæfke, using doses of 0.5 gram, found that the insufflation of calomel twenty hours after the last dose, resulted in irritation. In our cases the doses of the iodide were moderate and had not been taken just before the calomel was insufflated.

It is scarcely necessary to mention that other preparations of mercury beside calomel may be followed by the same results. The most common perhaps are the oxides and the ammoniated mercury.

On the other hand, the iodide may be taken in other forms, as in the syrup of the iodide of iron.

Judging from the chemical action we would conclude that the bromides would have similar effects and this is borne out by Bellini.[16]

In conclusion another form of calomel conjunctivitis may be mentioned. This is due to the use of impure calomel, containing the bichloride or free hydrochloric acid. A serious case caused by the latter contamination was published by Hotz.[17] But this form of calomel conjunctivitis is very rare.

[16]See Schlæfke, loc. cit.

[17]Knapp's Archives of Oph., 1882.

SOCIETY PROCEEDINGS.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

TWENTY-NINTH ANNUAL MEETING HELD JULY 19 and 20, 1893, AT FORT GRISWOLD HOUSE, NEW LONDON, CONN.

The Society was called to order by the Vice-President, Dr. George C. Harlan, of Philadelphia.

THE RELATION OF THE PATELLAR TENDON—REFLEX TO SOME OF THE OCULAR REFLEXES FOUND IN GENERAL PARALYSIS OF THE INSANE.

By Dr. Charles A. Oliver, of Philadelphia.

The following formulations were offered.

1. In some of the cases in the second stage of the disease, especially where the patellar tendon-reflexes were unequally exaggerated, there appeared to be an irregular and unequal spastic innervation of the two irides, causing irregularities in pin point pupil forms.

2. In a few cases, especially in the third stage of the disorder, where the patellar tendon-reflexes were unequally diminished, the pupil-size though small and its shape though somewhat irregular, seemed to be but little acted upon by any powerful mydriatic.

3. In many cases, especially in comparatively young subjects in the third stage of the disease, where the patellar tendon-reflexes were unequally diminished there appeared to be an unequal paralytic innnervation of the irides; the pupillary

dilatation manifesting itself at times, though not as a rule, in the eye with the greater amount of objective optic head-degeneration and retinal change.

4. In a few cases (especially in men beyond middle life) in the third stage of the disorder, where the patellar reflexes were markedly diminished and where the ataxies were quite pronounced, there were marked temporary assymetries of pupillary form, one often being quite small and irregular for several examinations, whilst its fellow was large and ovoid or oval.

5. In quite a number of cases, especially in the advanced stages of the disease (although seen in a number of cases in their earliest stages) when the patellar tendon-reflexes were unequally exaggerated or diminished, there was a failure of the irides to respond to even major degrees of light stimulus; this being true not only for those subjects exhibiting a true spastic myosis but more especially shown in those instances where with partial dilatation of the pupil, mydriatics failed to act.

6. In many instances, especially in the older cases, where the patellar tendon-reflexes were, as a rule, unequally diminished or even lost, thers was not only failure of iris-response to the strongest light stimulus carefully thrown upon the retina, but, where obtainable, the irides seemed to fail to react to the various coarse and rough subjective add objective procedures necessary to be used in order to evolve both separated and associated efforts for accommodation and associated efforts for convergence.

7. In some instances, where ciliary muscle innervation could be satisfactorily obtained, both the spastic excitation and the paralytic innnervation at times found by subjective reading tests and objective study with the retinoscope, seemed to be in direct ratio with the patellar tendon-reflexes as the iridic changes.

8. In quite a number of changes where there was marked irregularity of the pupils with more or less want of reaction of the irides to light stimulus, the patellar tendon-reflex on the

side of the larger pupil seemed to be the one the more greatly diminished.

9. In a number of instances, especially during the very earliest stage of the disease, where the patellar tendon-reflexes were beginning to lessen to unequal degrees, there often appeared momentary secondary ataxic dilatation of the pupil during exposure to strong light stimulation.

In many cases, especially during the second stage of the disorder, when the patellar tendon-reflexes began to become irregular and inconstant, pupillary inequalities as expressive of unequal iris innervation and action, became more and more constant.

CLINICAL HISTORY OF A CASE OF SPINDLE-CELLED SARCOMA OF THE CHOROID, WITH A STUDY OF THE MICROSCOPIC CONDITION OF THE GROWTH.

By Dr. Charles A. Oliver, of Philadelphia.

The patient, a man 34 years of age, consulted the writer on account of trouble with the left eye. Five years previously he suddenly noticed that objects situated to the right became dimmed when he attempted to look at them with the left eye. This gradually and painlessly extended over the whole field of vision until in a little more than three year's time, the eye became blind.

In 1890, the tumor of the choroid was discovered by Dr. J. H. Thompson, of Kansas City. There was a history of syphilis but treatment had no effect upon the growth, and a diagnosis of sarcoma was made and an operation urged but not accepted.

When seen by the writer in June, 1892, a large vascular growth was seen in the upper part of the globe. Immediate enucleation was advised and accepted. The operation was done the following day. The patient has recently been seen and is perfectly well with no evidence of return.

Microscopical examination showed the growth to be a spin-

dle celled sarcoma. Sections and photographs were presented.

SARCOMA OF THE CHOROID.

By Dr. Emil Gruening, of New York.

The patient, a woman aged 30 years, was seen April 17, on account of diminution of sight in the right eye. The ophthalmoscope showed the retina in the macular region pushed forward. This projection was about four discs in diameter. This had given rise to no symptoms with the exception of a scotoma. Sarcoma was diagnosed and the eye was removed. Examination showed the growth to be a spindle-celled sarcoma.

SARCOMA OF THE EYE LID.

By Dr. Emil Gruening, of New York.

This affection is exceedingly rare,the case reported being the only one seen by the author. The patient was a young man 23 years old. He came under observation January 1, 1893. Five years previously he had noticed a small swelling in the lower lid of right eye. This bled freely and irregularly. It was operated on in another city but soon recurred. When seen it was as large as a hazelnut and involved two-thirds of the lid which readily bled. The skin covering the mass was freely movable. A small portion of the growth was removed and found to be sarcoma. The tumor with the entire thickness of the lid was then removed and the lid restored by a plastic operation.

Dr. H. Knapp in the discussion reported two cases of traumatic sarcoma of the lid, both terminating fatally.

TUMOR OF THE IRIS, PROBABLY TUBERCULAR.

By Dr. George C. Harlan, Philadelphia.

The patient, a male child, was born September 6, 1890. In

February, 1893, weakness of the right eye with photophobia and lachrymation was noticed. The child was first seen March 6, 1893. There was some conjunctivitis but no chemosis. There was a small posterior synechia. A number of small yellowish white rounded nodules were noticed on the periphery of the iris. These increased rapidly in size and others were added. The deposit increased rapidly and soon filled the upper outer third of the anterior chamber and completely covered the pupil. Intense photophobia of the sound eye developed and exucleation of the diseased eye was done March 15. After the operation the condition of the child rapidily improved, Microscopical examination indicated that the lesion was probably tubercular, although bacteriological examinations gave negative results.

REFLECTIONS UPON A DISASTROUS CASE OF OPHTHALMIA NEONATORUM.

By. Dr. B. Alex. Randall, of Philadelphia.

Dr. Randall referred to the great importance of strong clear-cut expressions in relation to preventible disease in order that the community and the profession may be properly aroused to the dangers of the situation and spurred to thorough and persistent efforts to combat them. Yet such expressions have danger to those using them and to others, some careful precautions may fail to prevent the disease or bring it to a successful termination. This point was brought painfully home to him by a diastrous case of ophthalmia neonatorum in which he could find no fault with the prophylactic or the therapeutic measures, yet both eyes were lost. Some authoritative statements as to the preventability and curability of the disease were repeatedly called to the attention of himself and the accoucheur. He wished to protest against too uncompromising claims as to the powers of medical measures, since such may be two-edged weapons which turn most seriously against their authors or other medical men who have really done all that human means can do.

CLINICAL NOTES ON SOME REFRACTIVE AND MUSCULAR CASES.

By Dr. B. L. Milliken, Cleveland, Ohio.

In very high degrees of astigmatism the use of the ophthalmoscope is the most satisfactory method of determining refraction. Six cases were cited where attempts were made to correct by the ordinary means of testing with no satisfactory results, while the ophthalmoscope gave most excellent corrections. In one case, a lad of 13 years, with history of frontotemporal headache for years, had a high degree of mixed astigmatism in the left eye which, under a mydriatic, gave no satisfactory results, but with the ophthalmoscope the following was obtained, the right eye having only a moderate degree of astigmatism: O. S.+4 D. cyl. ax. 10° ⌒ 4 D. cyl. ax. 110° V= $^{6}/_{IX}$. This glass with the proper one for the right eye gave great relief, and has been worn with comfort.

In another case that of a man aged 39, there was high mixed astigmatism in both eyes and especially marked in the right eye which, with a mydriatic, had to be worked out with the ophthalmoscope and gave the following: O. D.—10 D. cyl ax 90° ⌒ + 7 D. cyl ax 180°=V.=$^{6}/_{IX}$. O. S.—6 D. cyl ax 100° ⌒ 4 D. cyl ax 10 V=$^{6}/_{IX}$. These glasses have been worn constantly for two years with the greatest comfort, the man working all day at book-keeping. The ophthalmometer showed great irregularity in the images and could not be used with any accuracy in testing the refraction.

Several cases were reported showing what could be done with prisms in correcting muscular insufficiencies, and the question was brought out as to the advisability of wearing prisms at various angles for the purpose of correcting both a lateral and a vertical muscular insufficiency with the same glass; for instance, in a case of a lateral insufficiency of say 10 and a vertical insufficiency of 10, one at 90° and the other at 180°, place a 2° prism at 45° or 135° right or left as the case may be. The histories of several cases of this kind were

given in which patients had worn the glasses thus with much benefit, and a trial of this kind was urged.

SEVERAL CASES IN WHICH THE VERTICAL DIPLOPIA TEST PROVED UNTRUSTWORTHY.

By Dr. Samuel Theobald, of Baltimore.

Four cases were described in which the cover test showed a high grade of exophoria both in distant and near vision, but in which the vertical diplopia test failed entirely to demonstrate the presence of the condition, in some of the cases even indicating esophoria. In one of these cases and also in a case of esophoria, the notes of which were given, it was found that when, during the application of the vertical diplopia test, the cover test also was employed, a squint would show itself in the excluded eye, which the vertical prism failed to bring out, and which would disappear upon the removal of the cover, though the vertical diplopia was still maintained, showing that the latter had no controlling influence over the action of the lateral muscles. The cases, such as described in which the vertical diplopia test proved untrustworthy are, however, comparatively rare, and the writer still employs it daily and considers it of the greatest value.

AN ADDITIONAL NOTE IN REFERENCE TO THE CASE USEFUL VISION MAINTAINED BY MEANS OF A TOTALLY DISLOCATED LENS, HERETOFORE REPORTED TO THE SOCIETY.

By Dr. Samuel Theobald, of Baltimore.

The feature of interest was that a fragment of the dislocated lens, the capsule of which had ruptured two years before, fell through the pupil into the anterior chamber, where it remained for six months resisting the solvent and opacifying action of the fluids of the eye so completely as to retain its transparence and its sharply cut angles. It closely resembled

a bit of yellowish glass and might easily have been mistaken for a foreign body. As its presence in the anterior chamber began to cause considerable irritation, the pupil was dilated and it was caused to fall again into the vitreous body, its return to the anterior chamber being prevented by the application of a myotic. This was followed by the disappearance of the irritation which has not since returned. The insolubility of the lens fragment is the more remarkable in view of the fact that the patient was but two years old at the time the lens capsule ruptured.

A SERIES OF WOOL FOR THE READY DETECTION OF COLOR BLINDNESS.

By Dr. Charles A. Oliver, of Philadelphia.

The following modification had been made by the writer in the Holmgren series:

Five individual tests are employed, pure green, pure red, rose, pure blue and pure yellow.

Loose and seperate skeins of wool were employed. The colors were made of equal relative intensity. The value of the color used in each test skein was expressed. The set was so constructed that it could be used by any intelligent layman.

The test was so constructed that passing color changes could be preserved and permanently kept from future comparison.

The test was so constructed that written and verbal expressions of the character and the amount of the subnormal color perception could be given.

The wools were made of one grade of manufacture and dyed with vegetable material.

After several years trial the writer found that he could dispense with all but the five principal test skeins, five pure match skeins and eighteen confusion skeins of relative equal value to the pure match skeins.

AFTERNOON SESSION.

GOUTY RETINITIS, CHORO-RETINITIS AND NEURO-RETINITIS.

By Charles Stedman Bull, M.D., of New York.

The paper was based upon a study of the retinal changes found in over one hundred cases of gouty patients. Five of these cases (two with autopsy) were reported in detail.

The points to which attention were drawn were.

1. The changes in the fundus are always bilateral though rarely symmetrical in the two eyes.

2. The degeneration in the walls of the bloodvessels and in the retina cause marked impairment of central vision, little or no impairment of peripheral vision, and never end in blindness.

3. The loss of central vision is always progressive up to a certain point, unless the cause of the disease is recognized early in the outset and immediately and properly handled. Improvement of the vision after the disease is established cannot be expected.

4. Hæmorrhages into the retina are rare except in the beginning of the disease. Their absence later is probably due to the fact that the strength of the vascular wall is increased by the deposit, though its elasticity is diminished.

5. The most marked feature in the fundus is the development of the arterio-sclerosis and phlebo-sclerosis. This is seen by the ophthalmoscope in the vessels of the retina and the microscope shows that the degeneration exists as well in the vessels of the choroid and optic nerve.

6. Another almost pathognomonic symptom is the peculiar yellowish granular exudation in the retina, located by the ophthalmoscope around the posterior pole of the eye and generally leaving the macula intact and proved by the microscope to be mainly in the nerve-fibre layer, though found in all the layers except that of the rods and cones.

7. The changes in the optic nerve-fibres seem to be almost entirely intra-ocular and cannot be traced for any great distance back of the eyeball.

RETINITIS PUNCTATA ALBESCENS.

By Dr. Myles Standish, of Boston.

These cases are not uncommon yet the literature of the subject is surprisingly small for a condition which presents such a striking picture to the ophthalmoscope. The majority of the cases come on account of some discomfort in the use of the eyes, and the white, rounded glistening spots are discovered in the retina in the course of the examination. After a time comfort in the use of the eye returns, but without the spots disappearing. What the substance is that produces the appearance is undetermined. A case was reported which was of special interest as it apparently filled out the clinical history of these cases in the prodroma and acute stages.

REMOVAL OF HARD CATARACT BY SUCTION.

By Dr. Lucien Howe, of Buffalo.

It is probable that every operator has occasionally experienced difficulty in completing the final act of extracting the lens. In order to obviate this difficulty the writer had employed an instrument similar to a large dropping tube, by means of which a partial vacuum could be made. The tube was applied to the protruding lens, enabling the operator to draw it out.

Dr. Frank W. King, of New York, exhibited an ocular mask of papier mache, to be used for the protection of the eye after cataract operations.

THE ARTIFICIAL RIPENING OF CATARACT.

By Dr. Edward Jackson, of Philadelphia.

A series of cases were reported which had been treated by

tapping the anterior chamber, drawing off the aqueous humor and massage of the lens through the cornea as suggested by Pooley and advocated by White.

The operation was followed by very little reaction, there being no iritis or posterior synechia in any case. In patients over 50 years of age the operation was followed by rapid increase in the opacity of the lens and early maturity of the cataract. In patients under 35 years of age no effect upon the existing lens opacity was produced.

The author concluded that this method of ripening cataract was certainly more efficient than that of Foerster—iridectomy and massage; was almost entirely free from danger and was probably a better means of avoiding prolonged practical blindness than the extraction of the immature cataract.

A CASE OF TRAUMATIC DISLOCATION OF THR IRIS UNDER THE UNBROKEN CONJUNCTIVA. THE EYE DAMAGED BUT PRESERVED. TYPICAL SYMPATHETIC OPHTHALMIA IN THE OTHER EYE.

By Dr. Herman Knapp, of New York.

Mr. M., age 45 years, came under observation December 21, 1893. Ten days before his left eye had been struck by the head of a small pet dog with which he was playing. The eye had been red and black ever since, but not painful, the sight impaired. On the inner side of the cornea and 2 mm. from its margin the conjunctiva was raised by a black mass which proved to be the iris. The conjunctiva showed no wound or scar. The whole iris was found absent from its normal position. The lens was in place and transparent. There was no neuro-retinitis or isolated rupture of the choroid. Vision equaled $^{15}/_{cc}$. The right eye was free from any irritation. The patient was directed to bandage the injured eye lightly and not use the other eye and keep quiet. Everything did well until 29 days after the accident, when symptoms of sympathetic inflammation appeared in the right eye. Under active

treatment the attack subsided but relapses occurred, and vision in the right eye was comyletely lost. In the left eye vision equaled $^{2}/_{cc}$, and the displaced iris has shrunken to a flat blackish mass scarcely raised above the conjunctiva.

THURSDAY MORNING SESSION.

REMOVAL OF STEEL FROM THE VITREOUS WITH THE ELECTRO-MAGNET.

By Dr. E. E. Holt, of Portland Me.

The writer had previously reported six cases treated by this method. In the present paper he reports three cases. In all the piece of steel had entered through the anterior chamber, fracturing the lens. The conjunctiva was separated and an incision made through the sclerotic back of the equator of the eye, the knife in each instance striking the foreign body. The electro-magnet was then introduced and the steel removed. The lens was subsequently absorbed and good vision obtained in every case, notwithstanding the fact that in the third case there was pus in the anterior chamber when the case came under observation.

A PERMANENT MAGNET FOR USE IN REMOVING FOREIGN BODIES FROM THE CORNEA,

Was described by Dr. Walter B. Johnson, of Patterson, N. J.

It consists of a bar of steel cone-pointed and elongated at each end. It is charged by rotating it within the magnetic field of a generator. It will continue in full magnetic strength for a long time. It has served an excellent purpose on several occasions in removing small particles of steel from the cornea which had perforated and almost entered the anterior chamber.

SUPPRESSION OF THE VISUAL IMAGE.

By Dr. Walter B. Johnson, of Patterson, N. J.

In convergent strabismus there is present an amblyopic condition affecting the squinting eye. Hypermetropia was considered by Donders and others as the most frequent cause of convergent squint, exciting excessive efforts at accommodation, resulting in convergence, confusion of images and subsequent mental suppression of visual image in one eye, finally terminating in an amblyopic condition. It has been claimed by Schweigger, Alfred, Graefe and others, that amblyopia is not caused by squint, but exists as a primary or congenital condition. This produces convergence in consequence of confusion of images. The variety of amblyopia in question is apparently a purely physiological condition, the fundus being normal. The amblyopia is sometimes overcome by correction of the visual defects, but vision in the amblyopic eye rarely becomes equal to that of the fellow eye.

The following case was reported. T. K., age 19, had been cross-eyed since the age of three years. He has never been able to discover any object with left eye. There was hypermetropia in right eye. Vision in left eye equaled fingers at six inches. On June 13, enucleation of the right eye was required as the result of accident. June 18. Vision in left eye had increased to fingers at three feet. Examination showed a hypermetropia of 1.50 D. Under careful practice and instruction the vision in left eye rapidly improved, so that by July 1, he could read $^{20}/_{XV}$ with correcting glass and Jaeger No. 1, at twelve inches. Examination three years after the loss of the eye showed that the improvement had continued.

In this case whatever was the change which led to the loss of vision, it was not structural either in the eyeball or the nerve centers, but was in all probability pure amblyopia which resulted from the long continued mental visual suppression.

A CASE OF CONGENITAL CYST OF THE ORBIT WITH ANOPHTHALMUS.

By Dr. George C. Harlan, of Philadelphia.

The patient was a well developed and healthy child five months old. The left eye and appendages were perfectly normal. A tumor about the size of a small hen's egg filled the right orbit and projected considerably beyond it. The orbit was fully of adult size and the lids distended to more than twice their normal size. The skin was movable and natural in appearance. The cilia were well developed. The lids were separated about 2 cm. The exposed conjunctiva was congested but not much changed. There was no discharge. There was nothing to mark the position of the cornea. There was no movement in the tumor. No pulsation and it was incompressible. Fluctuation was decided but very tense.

As the tumor was growing and the deformity great, it was decided to remove it. Incision through the conjunctiva gave exit to a quantity of clear watery fluid. The cyst was simple, the outer portion being fibrous and tough, and the inner delicate, semi-transparent and bluish.

The child died 24 hours after operating, apparently from exhaustion following upon shock.

A careful inspection of the orbit was made after death. There was no connection with the intra-cranial cavity. There was no indication of any aperture. Nothing resembling an eye could be found in the extirpated cyst, though at the bottom of the sac there was an undefined mass of tissue.

A review of the literature was given, and the author concluded that the tumor was probably formed of the embryonic tissues of the eye, and that it was either an exaggerated hydrophthalmus, or a fœtal encysted coloboma which by its early inception and enormous growth had prevented the evolution of the eye.

RESTORATION OF THE UPPER EYE-LID BY MEANS OF A FLAP TAKEN FROM THE CHEEK.

By Dr. Samuel B. St. John, Hartford, Conn.

The authour demonstrated a method which was applicable to cases in which the upper lid had been destroyed by disease or injury, or in which the lid was removed by operation. In making the flap the incision commences about half an inch in front of the ear and runs forward below the lower lid about half an inch, and continues until the side of the nose is reached. It is then carried downward and until the flap is of sufficient width and then taken backward. The flap is next separated and secured by numerous stitches to the fastened surface above. The gap left is closed by separating the tissues of the cheek below the wound and sliding them upward.

EXECUTIVE SESSION.

The following were elected to membership: Dr. F. E. Cheney, Boston; Dr. Charles H. Thomas, Philadelphia; Dr. Wm. H. Wilmer, Washington D. C.; Dr. H. B. Chandler, Boston; Dr. J. E. Weeks, New York; Dr. George Fiske, Chicago; Dr. Edward Friedenberg,New York; Dr. William Cheatham, Louisville, Ky.

Officers for ensuing year.

President—Dr. George C. Harlan, Philadelphia.

Vice-President—Dr. O. F. Wadsworth, Boston.

Secretary and Treasurer—Dr. Samuel B. St. John, Hartford, Conn.

Corresponding Secretary—Dr. J. S. Prout, Brooklyn.

The Society adopted a by-law limiting the membership to one hundred and fifty.

Adjourned. W. H. MORRISON.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

HENRY POWER, M.B., F.R.C.S., President, in the Chair.

THURSDAY, JUNE 8, 1893.

TUMOR OF THE OPTIC NERVE.

Dr. Rockliffe (Hull) read notes of this case. The patient, a male, aged 20, was shown to the Society in March, 1892, as a case of monocular proptosis. In December, 1892, being emaciated, anæmic, and losing weight, the eyeball and growth were removed *en masse*. Mr. Treacher Collins kindly examined the specimen and reported as follows: "The tumor is situated in the region of the optic nerve, and is covered by a distinct thin capsule, which is continuous with the sclerotic, and is apparently the expanded dural sheath of the optic nerve. The tumor is oval in shape, and about equal in size to the eyeball itself. Its longest diameter measures 27 mm., and its narrowest 21 mm. It is of a greyish-brown color. An antero-posterior vertical section showed the parts of the eye in their normal position and apparently healthy. The vitreous is of good consistency, the optic disc not swollen. The growth commences two mm. behind the globe, expanding the dural and pial sheaths and pressing the lower portion of the nerve downwards; this is seen as a distinct white band running along the lower border of the growth." Microscopically Mr. Collins describes the tumor as consisting of nucleated cells, which have numerous delicate branching processes, interlacing with one another and forming a network the spaces of which are

of very different shape and size; in addition, there are bundles of closely-packed nucleated fibres and a few thin-walled blood vessels. Both pial and dural sheaths encircle the growth. The appearances resemble very closely those seen in gliomatous tumors of the brain, and the tumor probably originated in the neuroglia of the optic nerve. Dr. Rockliffe referred to the rarity of such tumors, and quoted cases recorded by Brailey, Hulke, Lawson, and others, and considered the symptoms of tumor of the optic nerve to be: Slowly but progressively increasing proptosis and loss of vision, with absence of pain and constitutional derangement, the external appearances of the eye and fundus oculi being normal with the exception of proptosis and dilated retinal veins, and possibly some atrophy of the nerve, accompanied with symptoms of posterior pressure on the globe. If the tumor sprang from the sheath the displacement would probably be forwards and non-central and the movement of the globe limited; but if from the nerve, the proptosis would be central, with no limitation of movement of the globe. He suggested the advisability of taking the field of vision in such cases as likely to lead to more exact diagnosis. The paper was illustrated by specimens and drawings.

ON THE COMBINED METHOD OF CATARACT EXTRACTION.

This paper was read by Mr. Swanzy. The author advocated the combined in preference to the simple method for the extraction of cataract, and reported on 100 consecutive operations for uncomplicated senile cataract by the former method. The results obtained were: 95 good, 2 medium and 3 failures. The three failures were due to iritis. The accidents and irregularities which occurred during the operation were. Loss of vitreous in small quantity twice. Hæmorrhage in the anterior chamber such as to interfere with the normal progress of the operation three times. Section too short four times; in two of these it was lengthened with scissors. Some cortical remains

were left twenty-seven times, but in all except three it was insignificant in amount. Reflex vomiting during and after the operation was seen twice in different patients. No case of suppuration occurred, careful antiseptic measures being regularly employed. There were six cases of plastic iritis. Marked striped keratitis occurred six times,besides frequently in slighter degrees, but in no instance did it leave permanent damage behind it. The incision occupies the upper third, or a little more, of the corneal margin. A coloboma of about 3.5 millimetres was made, and great pains were taken to reduce each of the pillars into the anterior chamber completely. Such a coloboma was sufficient to obviate secondary iris prolapse by providing a way of exit for the aqueous behind the iris when the wound happens to be ruptured during the first few hours of the healing process. In this series incarceration of the iris occurred only once, and that was in one of the cases where reflex vomiting took place. As one of the final steps of the operation Mr. Swanzy lays much stress on search with forceps for any tag of capsule which may lie in that part of the wound which correspond to the coloboma. If such a tag were captured it was drawn out and snipped off, and thus prevented from becoming incarcerated in the wound during healing. In 18 instances out of the 100 capsule was found in the wound and abscised.

The President, in thanking Mr. Swanzy for his paper and congratulating him on the excellence of his results, said that he was unable to agree with him on the question of iridectomy in extraction of cataract. He much preferred the simple operation, and believed he obtained better results therefrom than by the combined method. He mentioned a case in which serious damage to the cornea followed the incautious use of a strong solution of cocaine.

Mr. Critchett expressed his preference for extraction with iridectomy. He also referred to the danger to the cornea of the too liberal use of cocaine; he had for some time been in the habit of applying a drop or two of cocaine solution to the

iris before doing the iridectomy, and with altogether satisfactory results.

Dr. Drake-Brockman said that he had abandoned iridectoin his cataract operations since 1878. He had performed a very large number of extractions by the simple method since that date, and was satisfied with the general results. He was unable at the time to give the actual figures, but thought that prolapse of iris occurred in about six per cent.

Messrs Tweedy and Adams Frost expressed themselves in favour of the combined method of operation.

Mr. Hill Griffith mentioned some of the results obtained at the Manchester Eye Infirmary by both procedures. The figures, so far as they would bear comparison, were slightly in favor of the simple operation.

Mr. Richardson Cross was of opinion that it was inexpedient to conclude that all cases must be treated by one plan of operation. He thought the simple operation most suitable for a certain proportion of cases, the combined method for others.

Mr. Swanzy replied briefly to the remarks of the above-mentioned speakers. He thought that probably those operators who had given up iridectomy in cataract extractions had been accustomed to remove a large piece of iris, and so leave a disfiguring coloboma, and one which for visual purposes was objectionable. If a small iridectomy were performed he did not think these objections could be very seriously raised.

LIVING AND CARD SPECIMENS.

Mr. Juler—Microscopic Sections of Ciliary Sarcoma.

Mr. John Griffith—Specimens of a Tumor of the Ciliary Body.

Mr. Haydon—Ruptured Choroid with Perforations of the Iris.

Mr. Stanford Morton—Pemphigus of the Conjunctiva.

Mr. Marcus Gunn—Pemphigus of the Conjunctiva.

Mr. Lawford—New Growth in Ocular Conjunctiva.

Mr. Donald Gunn—Congenital Ophthalmoplegia Externa in Two Brothers.

Mr. Doyne—Drawing showing a cherry-red spot at the Macula.

Mr. Earnest Clarke—Nævus of Right Side of Face, Lids, and Conjunctiva, with Cataract in Right Eye.—*British Medical Journal.*

NEWS.

SECTION OF OPHTHALMOLOGY, PAN-AMERICAN MEDICAL CONGRESS.

MEETING: WASHINGTON, SEPTEMBER 5, 6, 7 AND 8, 1893.

The following papers have thus far been announced:

REFRACTIVE ERRORS.

1. Further studies of the cycloplegic value of Homatropin and Cocaine disk as a substitute for Atropin and Hyosciamin, by Dr. Casey A. Wood, of Chicago.

2. The relation of Skiascopy to other tests for the determination of the ocular refractions, by Dr. H. V. Wurdemann, of Milwaukee.

3. The necessity for complete suspension of accommodotion by mydriatics in the adjustment of glasses, by G. C. Savage, of Nashville.

4. A contribution to Refractive Errors, by Dr. J. C. Morgan, of Philadelphia.

5. Refraction Anomalies of Artists, by Dr. J. C. Morgan, of Philadelphia.

6. Astigmatism following Cataract extractions and other sections of the cornea, by Dr. Edward Jackson, of Philadelphia.

7. A few thoughts about Ophthalmometry, as to what the Javal Instrument will do, and what it will not, by Louis J. Lautenbach, of Philadelphia.

HETEROPHORIA.

8. A clinical study of Heterophoria, by Hiram Woods, of Baltimore.

9. An analysis of fifty cases of Internal Squint, by H. F. Hansell, of Philadelphia.

10. Some forms of Anomalies in Eye Muscles, by Dr. E. J. Gardner, of Chicago.

11. Affections of the Nose. as a cause of the want of concordance of the action of the Eye Muscles, by Dr. W. Cheatham, of Louisville.

12. Further experiences in graduated Tenotomy, by Dr. Chas. H. Thomas, of Philadelphia.

MISCELLANEOUS.

13. Treatment in six cases of "Irido-Cyclitis" complicated with cataract, by Dr. Robt. L. Randolph, of Baltimore.

14. Homeochronus hereditary optic atrophy, by Geo. M. Gould, of Philadelphia.

15. Electric Therapeutics in Ophthalmic Practice, by Dr. L. A. W. Alleman, of Brooklyn.

16. Gouty and Rheumatic Affections of the Eye, by Dr. W. Oliver Moore, of New York.

17. Some experiences in Hæmorrhagic Glaucoma, its progress and treatment, by Dr. S. D. Risley, of Philadelphia.

18. Suppurative processes of the Vitreous, by Dr. J. F. Fulton, of St. Paul.

19. The local application of Bichloride of Mercury in the deep inflammations of the Eye, by Dr. W. F. Mittendorf, of New York.

20. A clinical study of the visual field in Hemianopia, by Dr. Chas. A. Oliver, of Philadelphia.

21. Glaucoma from traumatic causes, by Dr. E. Lopez, of Havana, Cuba.

22. Skin grafting for malignancy of the Eye Lids, by Dr. E. B. Tiffany, of Kansas City.

23. Spontaneous replacement of a case of detached Retina, by Dr. J. Wallace, of Philadelphia.

24. The Nomenclature of Blepharitis, by Dr. Dudley S. Reynolds, of Louisville.

25. Etiology and early management of Glaucoma, by Dr. G. E. Dean, of Scranton.

26. Acute Monocular Neuro-retinitis with cases, by Dr. B. L. Milliken, of Cleveland.

27. Orbital Tumors, by Dr. W. B. Johnson, of Patterson, N. J.

28. Exophthalmus Traumaticus, by Dr. L. F. Love, of Philadelphia.

29. Further observations on the Eye of the Negro, by Dr.C. W. Kellock, of Charleston.

30. Hæmorrhagic or Croupous Iritis, by Dr. A. Alt, of St. Louis.

31. The hygienic and scientific value of examinations of the Eyes in the schools, by Dr. B. A. Randall of Philadelphia.

THE ELEVENTH INTERNATIONAL MEDICAL CONGRESS.

Regarding the postponement of the meeting, the Executive Committee says: "In consequence of the sanitary condition of several of the European States which prevent their medical men leaving home, the following, the advice of many of the most prominent scientists, both Italian and foreign, the Executive Committee of the Congress has decided by a large majority to postpone the meeting till April, 1894. The exact date of the inauguration will soon be fixed."